WHAT IS CLAIMED IS:

1. A data storage and retrieval medium, comprising:

a data layer capable of storing and erasing data via application of an energy beam; and

a separate capping layer deposited on said data layer, said separate capping layer being relatively transparent to said energy beam and comprising at least one material from a group comprising:

an epitaxial material;

an electrically conducting material;

a robust high melting point material; and

the robust high melting point material combined with a thin dielectric layer.

2. The data storage and retrieval medium of claim 1, wherein said epitaxial layer comprises an epitaxial material having an ability to grow in single-crystal form on Silicon 111 (Si(111)).

3. The data storage and retrieval medium of claim 2, wherein the epitaxial material is calcium fluoride.

4. The data storage and retrieval media of claim 1, wherein the electrically conducting material comprises graphite.

5. The data storage and retrieval medium of claim 1, wherein the electrically conducting material comprises carbon.

6. The data storage and retrieval medium of claim 1, wherein the energy beam comprises a near field optical non-diffraction limited electron beam.

7. The data storage and retrieval medium of claim 1, wherein the energy beam comprises an electron beam.

8. The data storage and retrieval medium of claim 1, wherein the robust high melting point material comprises Mo.

9. A data storage and retrieval medium, comprising:

an alterable data layer having the ability to be altered by an energy beam; and

a separate capping layer deposited atop the data layer, the separate capping layer being relatively transparent to the energy beam and comprising at least one material from a group comprising:

a robust high melting point material;

an electrically conductive material; and

an epitaxial material.

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10. The data storage and retrieval medium device of claim 9, wherein said robust high melting point material comprises molybdenum.

11. The data storage and retrieval medium device of claim 9, wherein said energy beam comprises a near-field optical non-diffraction limited beam.

12. The data storage and retrieval media device of claim 9, wherein said epitaxial material comprises calcium fluoride.

13. The data storage and retrieval media device of claim 9, wherein said electrically conductive material comprises a conducting polycrystalline or amorphous capping material.

14. The data storage and retrieval media device of claim 13, wherein said conducting polycrystalline or amorphous capping material comprises at least one from a group comprising graphite and graphitic (sp^2-bonded) amorphous carbon.

15. The data storage and retrieval media device of claim 9, wherein said data layer comprises InSe.

16. The data storage and retrieval media device of claim 9, wherein said energy beam comprises an electron beam.

17. The data storage and retrieval media device of claim 16, wherein said group of materials further comprises at least one from a group comprising GaSe, WSe_2, MoS_2, $MoTe_2$, GaS, and InS.

18. The data storage and retrieval media device of claim 9, wherein said group of materials further comprises:

the robust high melting point material and a thin dielectric layer.

19. The data storage and retrieval media device of claim 18, wherein said robust high melting point material comprises molybdenum, and said thin dielectric layer comprises silicon oxide.

20. A method for fabricating data storage and retrieval media, comprising:

providing a data layer capable of alteration via application of an energy beam; and

depositing a capping layer upon said data layer, said capping layer being relatively transparent to the energy beam and comprising at least one material from a group comprising:

a robust high melting point material;

an electrically conductive material;a highly anisotropic layered material; and

an epitaxial material.

21. The method of claim 20, wherein said robust high melting point material comprises molybdenum.

22. The method of claim 20, wherein said low mass density material comprises an epitaxial material.

23. The method of claim 22, wherein said epitaxial material comprises calcium fluoride.

24. The method of claim 20, wherein said electrically conductive material comprises one from a group comprising a conducting polycrystalline material and a conducting amorphous material.

25. The method of claim 24, wherein said conducting polycrystalline or amorphous capping material comprises at least one from a group comprising graphite and amorphous carbon.

26. The method of claim 20, wherein said data layer comprises InSe.

27. The method of claim 20, wherein said energy beam comprises a near-field optical non-diffraction limited beam.

28. The method of claim 20, wherein said highly anisotropic layered material comprises at least one from a group comprising GaSe, WSe_2, MoS_2, $MoTe_2$, GaS, and InS.

29. The method of claim 20, wherein said group of materials further comprises:

molybdenum and a thin dielectric layer.

30. The method of claim 29, wherein said thin dielectric layer comprises silicon oxide.

31. A method for fabricating data storage and retrieval media, comprising:

providing a data layer alterable via application of an energy beam; and

depositing a capping layer upon said data layer, said capping layer being relatively transparent to the energy beam and comprising at least one material from a group comprising:

an epitaxial material;

a conducting material;

a highly anisotropic layered material;

a robust high melting point material; and

the robust high melting point material combined with a dielectric layer.

32. The method of claim 31, wherein said epitaxial layer comprises an epitaxial material having an ability to grow in single-crystal form on Silicon 111 (Si(111)).

33. The method of claim 32, wherein the epitaxial material comprises calcium fluoride.

34. The method of claim 31, wherein the conducting material comprises graphite.

35. The method of claim 31, wherein the conducting material comprises sp^2-bonded carbon.

36. The method of claim 31, wherein the highly anisotropic layered material comprises a layered chalcogenide.

37. The method of claim 31, wherein the highly anisotropic layered material comprises one from a group comprising graphite, GaSe, WSe_2, MoS_2, $MoTe_2$, GaS, and InS.

38. The method of claim 31, wherein said robust high melting point material comprises molybdenum.

39. The method of claim 38, wherein said dielectric layer comprises silicon oxide.